

36 Finding fractions of sets

We are learning to use multiplication to find fractions of a set.

NUMBER KNOWLEDGE

Numeracy Book 4
Number Mats and
Number Fans
Bowl a Fact
Fraction Pieces

In *this* book
Identifying fractions...page 239
Ordering fractionspage 243



Paper circles, counters.

Example

Brooke is making a pizza for her party. She wants to put the same number of tomato slices on each quarter. There are 12 pieces of tomato altogether. How many pieces should she put on each quarter?

Brooke has to find 1 quarter of 12.

$$6 + 6 = 12.$$

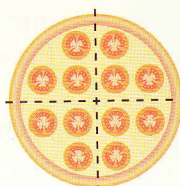
So there will be 6 pieces on each half.

$$3 + 3 = 6$$

So there will be **3 pieces** on each quarter.

$$\frac{1}{4} \text{ of } 12 = 3$$

Four quarters make a whole or 1.



or

Brooke has to find 1 quarter of 12.

There are 4 quarters in a whole.

$$4 \times ? = 12$$

$$4 \times 3 = 12$$

$$\text{So } \frac{1}{4} \text{ of } 12 = 3$$



A whole is the same as 1.

Activity

- Maddie made a cake for her 20th birthday party. It is to be shared equally by four people.

- Draw a diagram of the cake.

How would you divide the cake equally between four people? What fraction of the cake would each person get?



- Maddie puts 20 candles on the cake so that they are spread evenly.

Discuss with a partner how you could work out how many candles each person will get. Write down your reasoning.

- Write a fraction equation to show your answer.



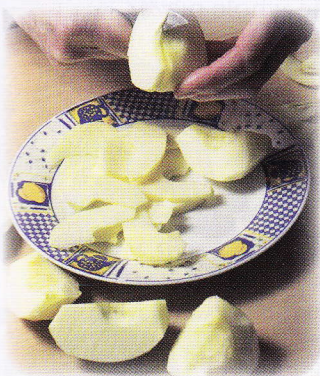
In the example the fraction equation looked like this.
 $\frac{1}{4} \text{ of } 12 = 3$



Work out the answers to **questions 2 to 5.**

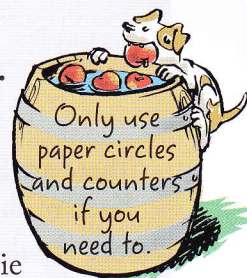
Show your reasoning and write a fraction equation to show your answer.

2



Five people share an apple pie equally.

- a What fraction of the pie does each person get?
- b 25 slices of apple are put on top of the pie so that they are spread evenly. How many apple slices does each person get?
- c Rebecca ate two pieces of the apple pie. What fraction of the pie did she eat? How many apple slices did she eat?



3

- a A small pavlova is cut into three equal slices. What fraction of the pavlova is each slice?
- b 27 strawberries are spread evenly on the top of the pavlova. How many strawberries are on each slice?
- c Andrew ate two slices of the pavlova. What fraction did he eat? How many strawberries did he eat?



4



- a A box of fizzy drink cans is shared by ten people at a disco. What fraction of the box does each person get?
- b There are 20 cans in the box. How many cans does each person get?
- c At the next disco everyone gets 3 tenths of a box. How many cans does each person get?

5

Millee's class gets 1 third of the new reading books that arrive at school. How many books would they get if these numbers of books arrived?

- a 12
- b 21
- c 90
- d 120



6

Discuss with a classmate what knowledge you are using to find a fraction of a set.

7



Challenge

Sudesh cuts his birthday cake into tenths. The candles are spread evenly and each piece looks like this. How old is Sudesh?



- Examples** a This shows 1 eighth of a pizza with tomato slices on top. Each piece has the same number of tomato slices. How many tomato slices would be on the whole pizza?

There are 8 eighths in a whole pizza (1 pizza).
Each of the eight pieces has **three** slices of tomato.

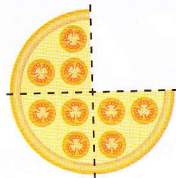
$$8 \times 3 = 24$$

If $\frac{1}{8}$ of $\boxed{?} = 3$ then $\boxed{?} = 24$.

There are **24 slices** of tomato on the whole pizza.



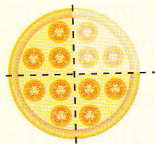
- b This shows 3 quarters of a pizza. If the tomato slices were evenly spread, how many would be on the whole pizza?



If the pizza was divided into quarters there would be **three** slices on each quarter. There are **four** quarters in a whole pizza.

$$4 \times 3 = 12$$

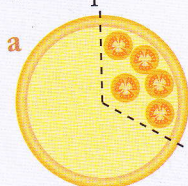
$\frac{3}{4}$ of $\boxed{?} = 9$ so $\boxed{?} = 12$.



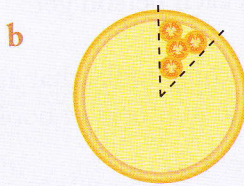
Work out the answers to these.

Show your reasoning and write a fraction equation for each.

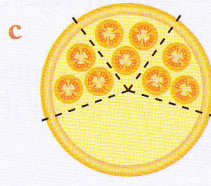
- 8 Each of these shows the number of pieces of tomato on a fraction of a pizza. How many pieces of tomato would be needed for the whole pizza?



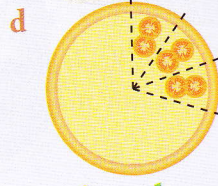
1 third



1 eighth



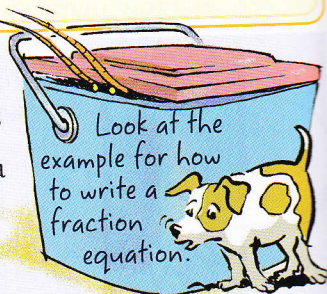
3 fifths



3 tenths

- 9 Jack took a bag of 24 apples to football practice. He gave 1 sixth of them to Mike.

- a How many did Mike get?
b He gave the rest to five other friends to share. How many apples did they each get?
c What fraction of the 24 apples did each of his other friends get?

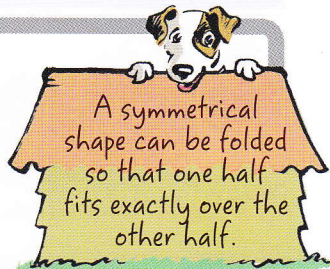
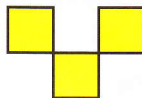




- 10**
- a** 36 people came to the “Learn to ride” day at a riding school. 2 thirds of them had never been on a horse before. How many people had never been on a horse?
- b** There are 25 stables at the school. 3 fifths of the stables are being used for the horses. How many stables are being used for the horses?

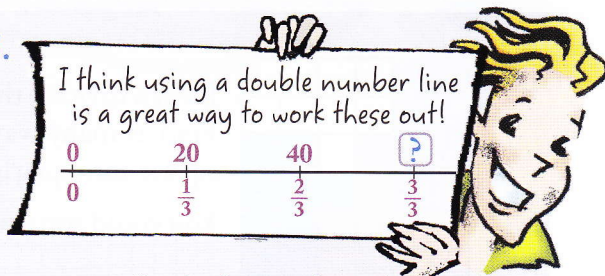
11 Challenge

This shows 3 fifths of a symmetrical shape. Draw what the whole shape might look like. Give as many different answers as you can.



Work out the answers to **questions 12 to 15**. Show your reasoning and write a fraction equation for each.

- 12** $\frac{2}{3}$ of a concert took 40 minutes. How long was the whole concert?



- 13** $\frac{3}{8}$ of the runners in the school cross-country race finished in under 15 minutes. If there were 96 pupils in the cross-country race, how many finished in under 15 minutes?
- 14** At a kids' charity triathlon, each entrant is charged \$2 times their age to enter. Of the money collected, $\frac{1}{4}$ goes to the organisers, $\frac{3}{5}$ goes to charity and the rest is spent on prizes. This table shows how the entrance fee of four children is spent. What goes in the gaps?

Name and age	Entrance fee	Organisers	Charity	Prizes
Roy 10	\$20	\$5		
Whina 15				
Jai _____		\$7		
Finn _____			\$6	

15 Challenge

There are 1000 g in 1 kg.



- a** Here is a recipe for four people. Change the recipe so that it is for five people.
- b** Change the recipe so that it is for three people.

Lasagne 4 people

- 1 kg mince
- 1 onion
- 600 ml cheese sauce
- 30 g tomato paste
- 500 g lasagne sheets

